

AMENDMENTS TO THE CLAIMS

The following is a complete listing of the pending claims.

- 1-6. (Cancelled)
7. (Currently amended) A substrate with a surface consisting of a hydrophobic surface formed by the surface material or by a coating applied to the surface, comprising a microarray of DNA sequences, wherein (i) the microarray has a density of 1,000 or more discrete regions of DNA sequences per cm^2 of substrate surface, (ii) the DNA sequences are isolated polynucleotides, (iii) the microarray comprises 1,000 or more regions, and (iv) the DNA sequences contained in each discrete region are at least 50 subunits in length, which are individually applied to each region in the microarray, wherein each said region is formed by applying a volume of aqueous reagent solution comprising a DNA sequence selected for said region, wherein said hydrophobic surface prevents spreading of said volume applied to said surface via reagent bead formation.
8. (Cancelled)
9. (Previously presented) The substrate of claim 7, wherein the density of discrete regions of DNA sequences is at least $2500/\text{cm}^2$.
10. (Currently amended) The substrate of ~~any one of claims~~ claim 7 or 9, wherein the substrate is glass.
11. (Currently amended) The substrate of ~~any one of claims~~ claim 7 or 9, wherein the substrate is non-porous.
12. (Cancelled)

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13. (Currently amended) The substrate of ~~any one of claims 7 or 9~~ claim 14, wherein the surface of the substrate comprises one or more chemical moieties selected from the group consisting of silyl, hydroxyl, carboxyl, amine, aldehyde, and sulhydryl.
14. (Currently amended) The substrate of ~~any one of claims~~ claim 7 or 9, wherein the DNA sequences are covalently bound to the surface of the substrate.
15. (Currently amended) The substrate of ~~any one of claims~~ claim 7 or 9, wherein the DNA sequences are non-covalently bound to the surface of the substrate.
16. (Previously presented) The substrate of claim 15, wherein the DNA sequences are non-covalently bound to a polycationic polymer on the surface of the substrate.
17. (Currently amended) The substrate of ~~any one of claims~~ claim 7 or 9, wherein the DNA sequences are selected from the group of polynucleotides consisting of mRNA-derived sequences, genomic DNA sequences and fragments thereof.
18. (Currently amended) The substrate of ~~any one of claims~~ claim 7 or 9, wherein the microarray comprises 2,500 or more regions.
- 19-20. (Cancelled)
21. (Currently amended) A substrate with a surface consisting of a hydrophobic surface formed by the surface material or by a coating applied to the surface, comprising a microarray of DNA sequences, wherein the DNA sequences are polynucleotides of at least 50 subunits in length, produced by a method comprising the steps of
- (a) depositing a selected volume between about 0.002 nl and about 2 nl of a solution comprising a selected, isolated polynucleotide at a discrete region on the hydrophobic surface of the substrate, wherein said hydrophobic surface prevents spreading of said volume via reagent bead formation; and

- (b) repeating step (a) at other locations on the surface of the substrate until a microarray of 1,000 or more regions is formed, wherein the regions are at a density of at least 1,000 regions/cm².
22. (Cancelled)
23. (Previously presented) The substrate of claim 21, wherein the density of discrete regions in the microarray is 2,500 regions/cm² or more.
24. (Previously presented) The substrate of claim 21, wherein the substrate is glass.
25. (Previously presented) The substrate of claim 21, wherein the substrate is non-porous.
26. (Cancelled)
27. (Currently amended) The substrate of claim ~~24~~ 29, wherein the surface of the substrate comprises one or more chemical moieties selected from the group consisting of silyl, hydroxyl, carboxyl, amine, aldehyde, and sulfhydryl.
28. (Cancelled)
29. (Previously presented) The substrate of claim 21, wherein the DNA sequences are covalently bound to the surface of the substrate.
30. (Previously presented) The substrate of claim 21, wherein the DNA sequences are non-covalently bound to the surface of the substrate.
31. (Previously presented) The substrate of claim 21, wherein the DNA sequences are selected from the group of polynucleotides consisting of mRNA-derived sequences, genomic DNA sequences, and fragments thereof.
32. (Currently amended) The substrate of ~~any one of claims~~ claim 21 or 23, wherein the microarray comprises 2,500 or more regions.
33. (Cancelled)

34. (Currently amended) A substrate with a surface consisting of a hydrophobic surface formed by the surface material or by a coating applied to the surface, comprising a microarray of DNA sequences and suitable for analysis of a polynucleotide mixture, wherein (i) the microarray has a density of 1,000 or more discrete regions of DNA sequences per cm² of substrate surface, (ii) each of said regions contains, as an isolated polynucleotide, a unique DNA sequence having at least 50 subunits, (iii) the microarray comprises at least 1,000 regions having individually applied DNA sequences unique to others of said 1,000 regions, such that the DNA sequences in said regions are selective in hybridizing with corresponding members of said mixture, wherein each said region is formed by applying a volume of aqueous reagent solution comprising a DNA sequence unique for said region, wherein said hydrophobic surface prevents spreading of said volume applied to said surface via reagent bead formation.
35. (Currently amended) A ~~The~~ substrate ~~according to claims of claim~~ claim 34, wherein the microarray permits detection of a two-fold change in the relative abundance of polynucleotides in mixtures subjected to analysis.
36. (Currently amended) A substrate with a surface consisting of a hydrophobic surface formed by the surface material or by a coating applied to the surface, comprising a microarray of DNA sequences where (i) the microarray has a density of 1,000 or more discrete regions of DNA sequences per cm² of substrate surface, (ii) the DNA sequences are purified polynucleotides having at least 50 subunits, and (iii) the DNA sequences are non-covalently bound to a polycationic polymer on the surface of the substrate, wherein each said region is formed by applying a volume of aqueous reagent solution comprising

a DNA sequence unique for said region, wherein said hydrophobic surface prevents spreading of said volume applied to said surface via reagent bead formation.

37. (Previously presented) The substrate according to claim 36, wherein the DNA sequences are cDNAs.
38. (Currently amended) ~~A~~ The substrate ~~with a surface comprising a microarray of DNA sequences~~ of claim 7, 21, 34 or 36, wherein the DNA sequences are distinct gene sequences whose expression levels are specifically related to the differences between test cells relative to control cells.
- 39-40. (Cancelled)